

## **REMARKS**

Claims 1, 3-6, 8-9 and 11-29 are currently pending in this application. Claims 2, 7 and 10 have been cancelled without prejudice.

Claims 1, 4, 8, 11, 12, 13, 15, 21, 22, 23, 24, 28 and 29 have been amended for clarity. Support for the amendments may be found throughout the specification. No new matter has been added.

Favorable reconsideration is respectfully requested.

### **I. Claim Objections**

Claims 8, 9, 13, 14 and 24 have been objected to for informalities.

Claims 8 and 13 have been amended to recite the first nonwoven layer and the second nonwoven layer.

Claim 24 has been amended to remove the inappropriate mark between “vacuum” and “cleaner.”

Therefore, Applicants respectfully request that the objections to claims 8, 9, 13, 14 and 24 be withdrawn.

### **II. Claim Rejections under 35 U.S.C. §112**

Claims 15-25, 28 and 29 have been rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

Although Applicants respectfully disagree, Applicants have amended the claims as follows:

Claims 15 and 22 have been amended to recite that the filter medium at the region has reduced air permeability relative to a region of the filter structure free of the filter paper layer.

Applicants respectfully request that the rejection of claims 15-25, 28 and 29 under 35 U.S.C. §112, first paragraph, be withdrawn.

Claims 1, 3-6, 8, 9 and 11-29 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite.

Claim 1 has been amended to recite “said nonwoven layer is hot calendered only in said at least one region” and claim 4 has been amended to recite “an adhesive is provided only at said at least one region.”

Claims 15 and 22 have been amended to recite that the filter medium at the region has reduced air permeability relative to a region of the filter structure free of the filter paper layer.

Claims 11 and 12 have been amended to clarify “only the at least one region” and to provide antecedent basis for “the region.”

Claim 23 has been amended to clarify that the region of the filter structure provided with the filter paper layer is exposed directly to an airflow entering the bag.

Claims 21, 28 and 29 have been amended to remove the term “about.”

Therefore, Applicants respectfully request that the rejection of claims 1, 3-6, 8, 9 and 11-29 under 35 U.S.C. §112, second paragraph, be withdrawn.

## **II. Claim Rejections under 35 U.S.C. §102 and §103**

### **A. Claim 1**

Claim 1 has been rejected under 35 U.S.C. §103(a) as being obvious over Schultink (EP 960 642A2) in view of Chand et al. (Structure and properties of polypropylene fibers during thermal bonding, *Thermochimica Acta* 367-368 (2001) 155-160) as evidenced by Ward (Micro Denier Nonwoven Process and Fabrics), Webster's Third New International Dictionary, Unabridged 1993, and Arnold (U.S. 5,707,468).

Applicants respectfully traverse the rejection of claim 1 based on Schultink in view of Chand.

Claim 1 has been amended to recite that the nonwoven layer is hot calendered only in the at least one region so that the average pore size of the at least one region is smaller than 50  $\mu\text{m}$ , and fibers are bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the region is inhibited.

Schultink is directed to a disposable vacuum filter bag constructed of layers which include a high-air-permeability first layer positioned upstream in the direction of air flow of a second filtration layer. (Abstract.) Schultink at FIG. 8E discloses a

spunbond layer. However Schultink does not teach or suggest a layer, a region or an area that is treated by hot calendaring such that only in this specific region, the average pore size smaller than 50  $\mu\text{m}$  and that fibers are bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the region is inhibited. The nonwoven layer being hot calendered only in the specific region means that outside the specific region there is another area or region of the same layer that does not show the characteristics. In contrast, all layers disclosed in Schultink show the same characteristics for the whole area.

As acknowledged by the Examiner on page 10 of the February 11, 2011 Office Action, Schultink does not specifically teach wherein the at least one region is a hot calendered region. According to the Examiner, Chand has been cited for teaching thermal bonding. However, Chand fails to make up the deficiencies of Schultink. Chand also fails to teach or suggest that the nonwoven layer is hot calendered only in the at least one region so that the average pore size of the at least one region is smaller than 50  $\mu\text{m}$ , and fibers are bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the region is inhibited. Together and individually, Schultink and Chand fail to teach or suggest all the limitations of claim 1.

Therefore, Applicants respectfully request that the rejection of claim 1 under 35 U.S.C. §103(a) be withdrawn.

### **B. Claim 3**

Claim 3 has been rejected under 35 U.S.C. §103(a) as being obvious over Schultink in view of Chand as evidenced by Ward, Webster's Third New International Dictionary and Arnold as applied to claim 1 above and further in view of Ando et al. (U.S. 5,206,061).

Applicants respectfully traverse the rejection of claim 3 based on Schultink in view of Chand and further in view of Ando.

Schultink and Chand have been discussed above with respect to claim 1 and fail to teach or suggest every element of claim 1.

According to the Examiner, Ando has been cited for teaching spun bonded non-woven fabric and that the mean (i.e. average) fineness of the fibers of the non-woven fabric is preferably 10 denier or less for appreciable dust trapping.

Ando is directed to a dust-proof head gear. (Abstract.) The headgear 1 is made from an electret non-woven fabric 2. (Col. 2, lines 52-54.) However, Ando fails to teach or suggest that the nonwoven layer is hot calendered only in the at least one region so that the average pore size of the at least one region is smaller than 50  $\mu\text{m}$ , and fibers are bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the region is inhibited.

Ando fails to make up the deficiencies of Schultink and Chand. Even assuming that a nonwoven layer having a basis weight between 10 and 100  $\text{g/m}^2$  and an average fineness of 0.6-12 denier is well known in the art is true and accurate, that alone does not provide any motivation to modify Schultink's nonwoven layer as suggested by the Examiner. Although helpful insights need not become "rigid and mandatory formulas" such as the TSM test, the Supreme Court emphasized that "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 416, 418-19 (2007). The Supreme Court also cautioned that "[a] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning." *Id.* at 421 (citing *Graham*, 383 U.S. at 36). A nonwoven layer having a basis weight between 10 and 100  $\text{g/m}^2$  and an average fineness of 0.6-12 denier merely being well known in the art would not have prompted a person of ordinary skill in the art to combine the layers of Ando with Schultink and Chand's filters in the way that claim 3 does.

Therefore, Applicants respectfully request that the rejection of claim 3 under 35 U.S.C. §103(a) be withdrawn.

### **C. Claims 1 and 3**

Claims 1 and 3 have been rejected under 35 U.S.C. §103(a) as being unpatentable over van Rossen (WO/93/21812) in view of Johnson (U.S. 4,877,526), Ando, Chand and Arnold as evidenced by Ward and Webster's.

Applicants respectfully traverse the rejection of claims 1 and 3 as being unpatentable over van Rossen in view of Johnson, Ando, Chand and Arnold as evidenced by Ward and Webster's.

Claim 1 has been amended to recite that the nonwoven layer is hot calendered only in the at least one region so that the average pore size of the at least one region is smaller than 50  $\mu\text{m}$ , and fibers are bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the region is inhibited.

Van Rossen is directed to a dust bag 60 having a protective layer strip 48 through the filter bag. (Abstract.) As acknowledged by the Examiner on page 14 of the February 11, 2011 Office Action, van Rossen does not specifically teach the spunbond nonwoven layer having a basis weight between 10 and 100  $\text{g/m}^2$  and wherein the spunbond fibers have an average fineness of 0.6-12 denier, with an average pore size smaller than 50  $\mu\text{m}$ . In addition, van Rossen fails to teach or suggest that the nonwoven layer is hot calendered only in the at least one region so that the average pore size of the at least one region is smaller than 50  $\mu\text{m}$ , and fibers are bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the region is inhibited. In contrast, all layers disclosed in van Rossen show the same characteristics for the whole area.

Johnson has been cited by the Examiner for disclosing a filter bag having an equivalent pore size of about 20  $\mu\text{m}$ . However, Johnson fails to teach or suggest that the nonwoven layer is hot calendered only in the at least one region so that the average pore size of the at least one region is smaller than 50  $\mu\text{m}$ , and fibers are bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the region is inhibited.

Similarly, Ando and Chand have all been discussed above and also fail to teach or suggest that the nonwoven layer is hot calendered only in the at least one region so that the average pore size of the at least one region is smaller than 50  $\mu\text{m}$ , and fibers are bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the region is inhibited.

In addition, as discussed above, the Supreme Court cautioned that “[a] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.” *Id.* at 421 (citing *Graham*, 383 U.S. at 36). The Examiner’s reliance on six separate references suggests that the Examiner is relying upon hindsight, having knowledge of the Applicant’s own disclosure. But for this knowledge, the combination of the references would not have occurred to the Examiner. Thus, combining these references is improper.

Therefore, Applicants respectfully request that the rejection of claims 1 and 3 under 35 U.S.C. §103(a) be withdrawn.

#### **D. Claims 4 and 5**

Claims 4 and 5 have been rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being obvious over, Schultink (EP 0 960 645 A2) as evidenced by Ward, Webster’s Third New International Dictionary, Unabridged 1993, and Arnold.

Applicants respectfully traverse the rejection of claims 4 and 5 based on Schultink.

Claim 4 has been amended to recite that an adhesive is provided only at the at least one region so that an average pore size of the at least one region is smaller than 50  $\mu\text{m}$ , and that fibers are bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the region is inhibited.

Schultink has been discussed above. However, Schultink does not teach or suggest a layer, a region or an area that is treated by an adhesive such that only in this specific region, the average pore size is smaller than 50  $\mu\text{m}$  and that fibers are bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the region is inhibited. The adhesive being provided only in the specific region so that an average pore size smaller than 50  $\mu\text{m}$  and so that fibers are bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the region is inhibited means that there is another area or region of the same layer that does not show the characteristics. In contrast, all layers disclosed in Schultink show the same characteristics for the whole area.

Therefore, Applicants respectfully request that the rejection of claims 4 and 5 under 35 U.S.C. §102(b) or in the alternative 35 U.S.C. §103(a) be withdrawn.

**E. Claim 6**

Claim 6 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Schultink as applied to claims 4 and 5 above and further in view of Ohue et al. (U.S. 4,663,222).

Applicants respectfully traverse the rejection of claim 6 as being unpatentable over Schultink in view of Ohue.

Schultink has been discussed above with respect to claim 4 from which claim 6 ultimately depends. Ohue has been cited for disclosing the technique of applying the hotmelt. Ohue is directed to a water-repellant nonwoven fabric made of a melt-blown fiber. (Abstract.) Ohue fails to make up the deficiencies of Schultink. Schultink and Ohue, individually or in combination, fail to teach or suggest all the limitations of claim 6.

Therefore, Applicants respectfully request that the rejection of claim 6 under 35 U.S.C. §103(a) be withdrawn.

**F. Claim 11**

Claim 11 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Schultink as evidenced by Ward, Webster's, Arnold and Diehl et al. (U.S. 6,425,978).

Applicants respectfully traverse the rejection of claim 11 as being unpatentable over Schultink.

Claim 11 is directed to a method for producing a nonwoven layer for a filter. Claim 11 recites treating only the at least one region of the nonwoven layer, the treated region having a smaller surface area than the filter, such that the treated region has an average pore size smaller than 50  $\mu\text{m}$  and such that the fibers are bonded together and a movement of the fibers relative to each other in a direction parallel to the surface of the at least one region is inhibited.

Schultink has been discussed above and fails to teach or suggest a method of treating only the at least one region of the non-woven layer that has a smaller surface area than the filter, such that the treated region has an average pore size smaller than 50  $\mu\text{m}$  and such that the fibers are bonded together and a movement of the fibers

relative to each other in a direction parallel to the surface of the at least one region is inhibited. In contrast, all layers disclosed in Schultink show the same characteristics for the whole area.

Therefore, Applicants respectfully request that the rejection of claim 11 under 35 U.S.C. §103(a) be withdrawn.

#### **G. Claim 12**

Claim 12 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Schultink in view of Arnold and Chand as evidenced by Ward and Webster's.

Applicants respectfully traverse the rejection of claim 12 as being unpatentable over Schultink in view of Arnold and Chand.

Claim 12 recites a method of including treating only the at least one region of the nonwoven layer, the treated region having a smaller surface area than the filter, such that the treated region has an average pore size smaller than 50  $\mu\text{m}$  and such that the fibers are bonded together and a movement of the fibers relative to each other in a direction parallel to the surface of the at least one region is inhibited.

Schultink, Arnold, Ward and Webster's have been discussed above and fail to teach or suggest all the elements of claim 12.

Therefore, Applicants respectfully request that the rejection of claim 12 under 35 U.S.C. §103(a) be withdrawn.

#### **H. Claim 26**

Claim 26 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Schultink as evidenced by Ward, Webster's and Arnold as applied to claims 4 and 5 and further in view of Lutz et al. (Polypropylene: An A-Z Reference).

Applicants respectfully traverse the rejection of claim 26 as being unpatentable over Schultink in view of Lutz.

Schultink has been discussed above with respect to claim 4 from which claim 26 depends and fails to teach or suggest all the limitations of claim 4. According to the Examiner, Lutz teaches at page 301 and 303 that pulverized polymer is an alternative to hotmelt for adhesion of fibers (nonwoven material). However, Lutz fails to make up the



deficiencies of Schultink. Schultink and Lutz, individually or in combination, fail to teach or suggest all the limitations of claim 26.

Therefore, Applicants respectfully request that the rejection of claim 26 under 35 U.S.C. §103(a) be withdrawn.

**I. Claim 27**

Claim 27 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Schultink as evidenced by Ward, Webster's, Arnold and Diehl as applied to claim 11 and further in view of Lutz.

Applicants respectfully traverse the rejection of claim 27 as being unpatentable over Schultink in view of Lutz.

Schultink has been discussed above with respect to claim 11 from which claim 27 depends. Lutz has been discussed above with regard to claim 26. Lutz fails to make up the deficiencies of Schultink. Schultink and Lutz, individually or in combination, fail to teach or suggest all the limitations of claim 27.

Therefore, Applicants respectfully request that the rejection of claim 27 under 35 U.S.C. §103(a) be withdrawn.

**J. Claims 4, 8, 9, 13 and 14**

Claims 4, 8, 9, 13 and 14 have been rejected under 35 U.S.C. §103(a) as being unpatentable over van Rossen in view of Johnson, Ando, Schultink, Chand and Fesco (U.S. 3,498,031) as evidenced by Ward and Webster's.

Applicants respectfully traverse the rejection of claims 4, 8, 9, 13 and 14 as being unpatentable over van Rossen in view of Johnson, Ando, Schultink, Chand and Fesco as evidenced by Ward and Webster's.

Claim 4 has been amended to recite that an adhesive is provided only at the at least one region so that an average pore size of the at least one region is smaller than 50  $\mu\text{m}$ , and that fibers are bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the region is inhibited.

van Rossen is directed to a dust bag 60 having a protective layer strip 48 through the filter bag. (Abstract.) As acknowledged by the Examiner on page 14 of the February 11, 2011 Office Action, van Rossen fails to teach or suggest a nonwoven layer

having an average pore size smaller than 50  $\mu\text{m}$ . In addition, van Rossen fails to teach or suggest that an adhesive is provided only at the at least one region such that a movement of the fibers relative to each other in a direction parallel to a surface of the region is inhibited. In contrast, all layers disclosed in van Rossen show the same characteristics for the whole area.

Johnson has been cited by the Examiner for disclosing an equivalent pore size of about 20  $\mu\text{m}$ . Johnson has been discussed above and also fails to teach or suggest that an adhesive is provided only at the at least one region so that an average pore size of the at least one region is smaller than 50  $\mu\text{m}$ , and that fibers are bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the region is inhibited.

Fesco has been cited by the Examiner for disclosing a filter bag with a strip 14 that is applied to the material 10 with adhesive strips 16. However, Fesco fails to teach or suggest that an adhesive is provided only at the at least one region so that an average pore size of the at least one region is smaller than 50  $\mu\text{m}$ , and that fibers are bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the region is inhibited.

Similarly, Schultink, Ando and Chand have all been discussed above and also fail to teach or suggest that an adhesive is provided only at the at least one region so that an average pore size of the at least one region is smaller than 50  $\mu\text{m}$ , and that fibers are bonded together such that a movement of the fibers relative to each other in a direction parallel to a surface of the region is inhibited.

In addition, as discussed above, the Supreme Court cautioned that “[a] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning.” *Id.* at 421 (citing *Graham*, 383 U.S. at 36). The Examiner’s reliance on six separate references suggests that the Examiner is relying upon hindsight, having knowledge of the Applicant’s own disclosure. But for this knowledge, the combination of the references would not have occurred to the Examiner. Thus, combining these references is improper.

Therefore, Applicants respectfully request that the rejection of claims 4, 8, 9, 13 and 14 under 35 U.S.C. §103(a) be withdrawn.

**K. Claims 15-19 and 22-25**

Claims 15-19 and 22-25 have been rejected under 35 U.S.C. §103(a) as being unpatentable over van Rossen.

Applicants respectfully traverse the rejection of claims 15-19 and 22-25 as being unpatentable over van Rossen.

Claims 15 and 22 recite a filter paper layer defining a region having a smaller surface area than the filter structure, the filter medium at the region having reduced air permeability relative to a region of the filter structure free of the filter paper layer.

van Rossen is directed to a dust bag 60 comprising a filter bag having a protective layer strip 48 through the filter bag. (van Rossen, Abstract.) The protective layer strip consists of air-permeable material having an air permeability considerably higher (for example, at least by the factor 10) than the permeability to air of the actual filter material that forms the dust bag. (Page 3, lines 7-11.) With reference to FIGS. 1 and 2, the protective layer insert 38 is made from an air-permeable and resistant non-woven of synthetic fibers. (Page 7, lines 24-26.) For both the embodiment shown in FIGS. 1 and 2 and the embodiment shown in FIGS. 3 and 4, van Rossen emphasizes that the protective layer must have a significantly higher air permeability than the filter layer. For example, according to van Rossen, "Due to the high permeability to air of the protective layer insert 38 that is considerably higher than that of the fiber composite of the filter bag 28, the fluidic properties of the dust bag 16 are not impaired. (Page 8, lines 4-8.) Additionally, van Rossen describes the relationship between the protective layer and the filter bag as follows: "The permeability to air and the pressure drop of the dust bag are not compromised since the material of the protective layer is highly permeable to air when compared to the permeability to air of the remaining material of the filter bag." (Page 11, lines 24-29.) The only material disclosed in van Rossen having these air permeability properties is a nonwoven web. (See page 7, lines 24-29 and page 9, lines 19-21.) van Rossen clearly fails to teach or suggest a filter paper layer and further fails to teach or suggest the filter paper layer at the region of the filter

medium has reduced air permeability relative to a region of the filter structure free of the filter paper layer.

Further, one skilled in the art would not be motivated to provide a filter paper layer for the protective layer in van Rossen as suggested by the Examiner as the filter paper would not provide higher air permeability than either a filter paper bag layer or a nonwoven filter bag. Applicants respectfully assert that the Examiner is relying upon hindsight, having knowledge of Applicants' own disclosure. But for this knowledge, the combination of the references would not have occurred to the Examiner. Thus, combining these references is improper.

For at least these reasons, Applicants respectfully request that the rejection of claims 15-19 and 22-25 under 35 U.S.C. §103(a) be withdrawn.

**L. Claims 21, 28 and 29**

Claims 21, 28 and 29 have been rejected under 35 U.S.C. §103(a) as being unpatentable over van Rossen as applied to claims 15-19 and 22-25 above and further in view of Schultink.

Applicants respectfully traverse the rejection of claims 21, 28 and 29 as being unpatentable over van Rossen in view of Schultink.

van Rossen has been discussed above with respect to claim 15 from which claims 21, 28 and 29 ultimately depend and fails to teach or suggest a filter medium at the region having reduced air permeability relative to a region of the filter structure free of the filter paper layer.

Schultink has also been discussed above. As previously acknowledged by the Examiner in the Office Action dated May 21, 2009, page 10, Schultink fails to teach or suggest a filter paper having a surface area smaller than the filter structure. Schultink further fails to teach or suggest that the smaller surface area filter paper has a reduced air permeability relative to a second region of the filter structure free of the filter paper. Schultink fails to make up the deficiencies of van Rossen. van Rossen and Schultink, individually or in combination, fail to teach or suggest all the limitations of claims 21, 28 and 29.

Therefore, Applicants respectfully request that the rejection of claims 21, 28 and 29 under 35 U.S.C. §103(a) be withdrawn.

**M. Claims 15 and 20**

Claim 20 has been rejected under 35 U.S.C. §103(a) as being unpatentable over the CAPFIL 50 vacuum cleaner bag in view of van Rossen.

Applicants respectfully traverse the rejection of claims 15 and 20 as being unpatentable over the CAPAFIL 50 vacuum cleaner bag in view of van Rossen.

van Rossen has been discussed above with respect to claim 15 and fails to teach or suggest all the limitations of claim 15. Claim 20 depends from claim 15. van Rossen and the CAPAFIL 50 vacuum cleaner bag, individually or in combination, fail to teach or suggest all the limitations of claims 15 and 20.

Therefore, Applicants respectfully request that the rejection of claims 15 and 20 under 35 U.S.C. §103(a) be withdrawn.

**III. Summary**

Applicants respectfully assert that the claims are in condition for allowance. Allowance of the claims is earnestly solicited. Should the Examiner wish to discuss any of the above submissions in more detail, the Examiner is asked to please call the undersigned at the telephone number listed below.

Respectfully submitted,

Dated: May 11, 2011

/Heidi A. Dare/  
Heidi A. Dare  
Registration No. 50,775  
Attorney for Applicants

BRINKS HOFER GILSON & LIONE  
P.O. BOX 10395  
CHICAGO, IL 60610  
(312)321-4809